

Important Advances in Clinical Medicine

Epitomes of Progress—Chest Diseases

The Scientific Board of the California Medical Association presents the following inventory of items of progress in Chest Diseases. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist the busy practitioner, student, research worker or scholar to stay abreast of these items of progress in Chest Diseases which have recently achieved a substantial degree of authoritative acceptance, whether in his own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Chest Diseases of the California Medical Association and the summaries were prepared under its direction.

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Office Pulmonary Function

THE EVALUATION of a patient with respiratory symptoms should include some measurement of pulmonary function. This is just as important as a blood count or electrocardiogram when the presenting problem is weakness, fatigue or chest pain.

Physiologically, the relationship of the volume of air exchanged by the lung to the amount of pressure required to distend the lung is known as compliance. This is a manifestation of the stiffness of the lung. Most pulmonary abnormalities causing symptomatic dyspnea are those related to loss of volume, or to changes in the static or dynamic properties of the lung.

Static changes or parenchymal structure abnormalities may make the lung stiff (decreased compliance). This is found in fibrosis or pneumonia. On the other hand, loss of elasticity (emphysema) produces increased compliance. Changes in dynamic forces are produced by airway obstruction, bronchospasm, secretions or loss of elasticity. The respiratory muscles must over-

come these forces during breathing. Most diseases of the lungs exhibiting static or dynamic changes may be evaluated for functional changes initially in a physician's office.

Such pulmonary function tests are simple to carry out, are relatively inexpensive and require little time. It is important that a patient adequately understands the procedure and gives full cooperation. A wedge spirometer with a timing device will measure the volume and time the expiratory phase. These measurements correlate well with compliance and detect most pulmonary abnormalities, even in the early stages. Pulmonary function studies using this type of instrument include forced vital capacity (FVC), forced expiratory volumes at one or three seconds (FEV_1 or FEV_3), peak flow (usually at 200 to 1,200 ml of expiratory phase) and maximal midexpiratory flow (MMEF). A recorded spirogram expiratory curve (flow plotted against time) also allows for better interpretation of patient effort and for graphic reproducibility. FEV_1 and FEV_1/FVC ratio are probably the most frequently used measurements and correlate well